COMPUTER NETWORKS (BCSC 0008)
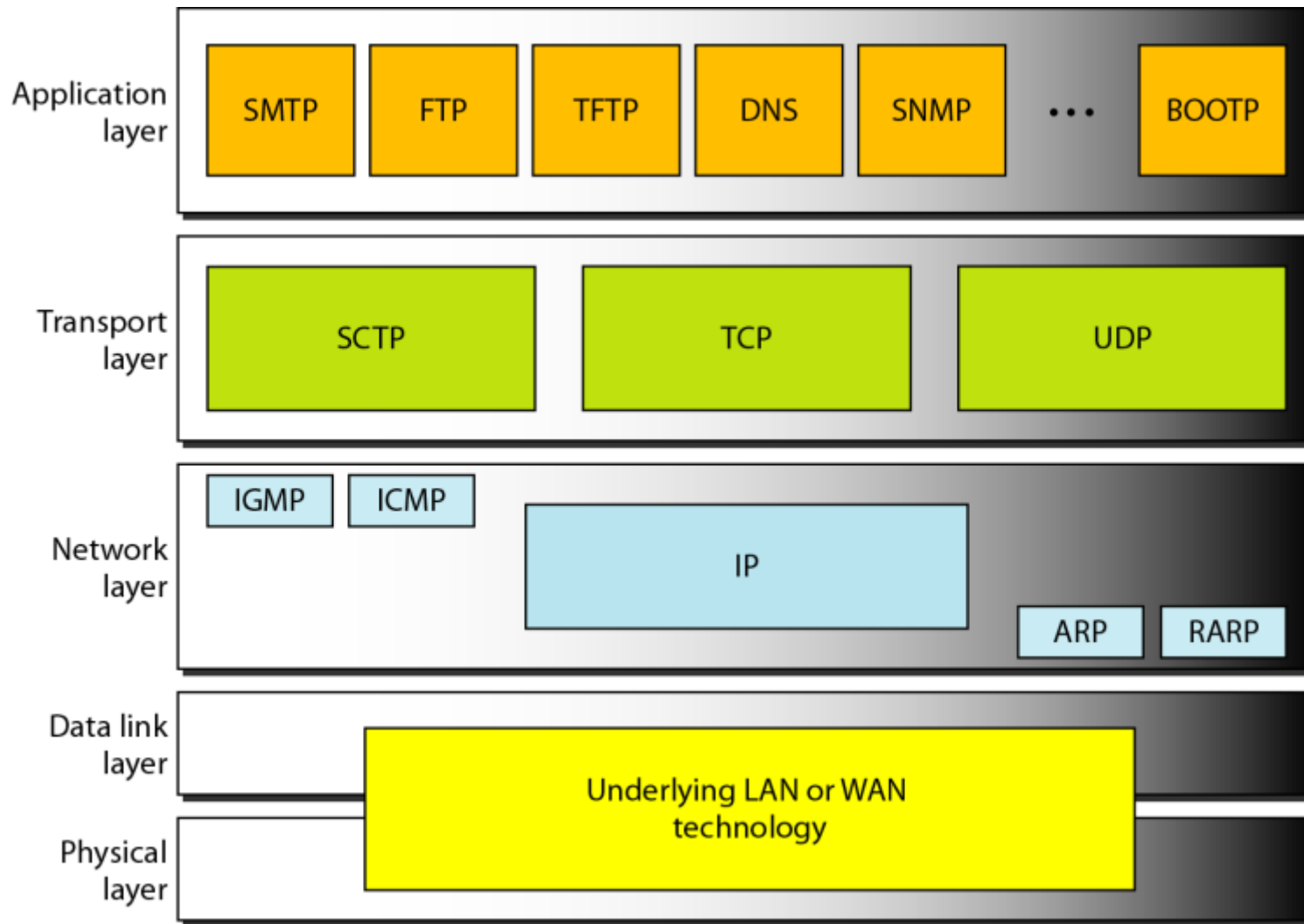
Lecture 21

Text and Reference Books

Text Books:

1. Fourouzan B. A. (2004), "Data Communication and Networking", 4th Edition, McGraw-Hill.

References:

1. Kurose, J. F. and Ross K. W. (2005), "Computer Networking: A Top-Down Approach Featuring the Internet", 3rd Edition, Addison-Wesley.

2. A. S. Tanenbaum (2006), "Computer Networks", 2nd Edition, Prentice Hall India.

Transport Layer: Introduction

Why we need transport layer?

- *Network layer is responsible for end to end (Host to Host) communication (IP address).*

- *There are several network application running in OS.*

- *How did NIC knows which packet belongs to which process/application?*

# Types of data deliveries: Internet Stack
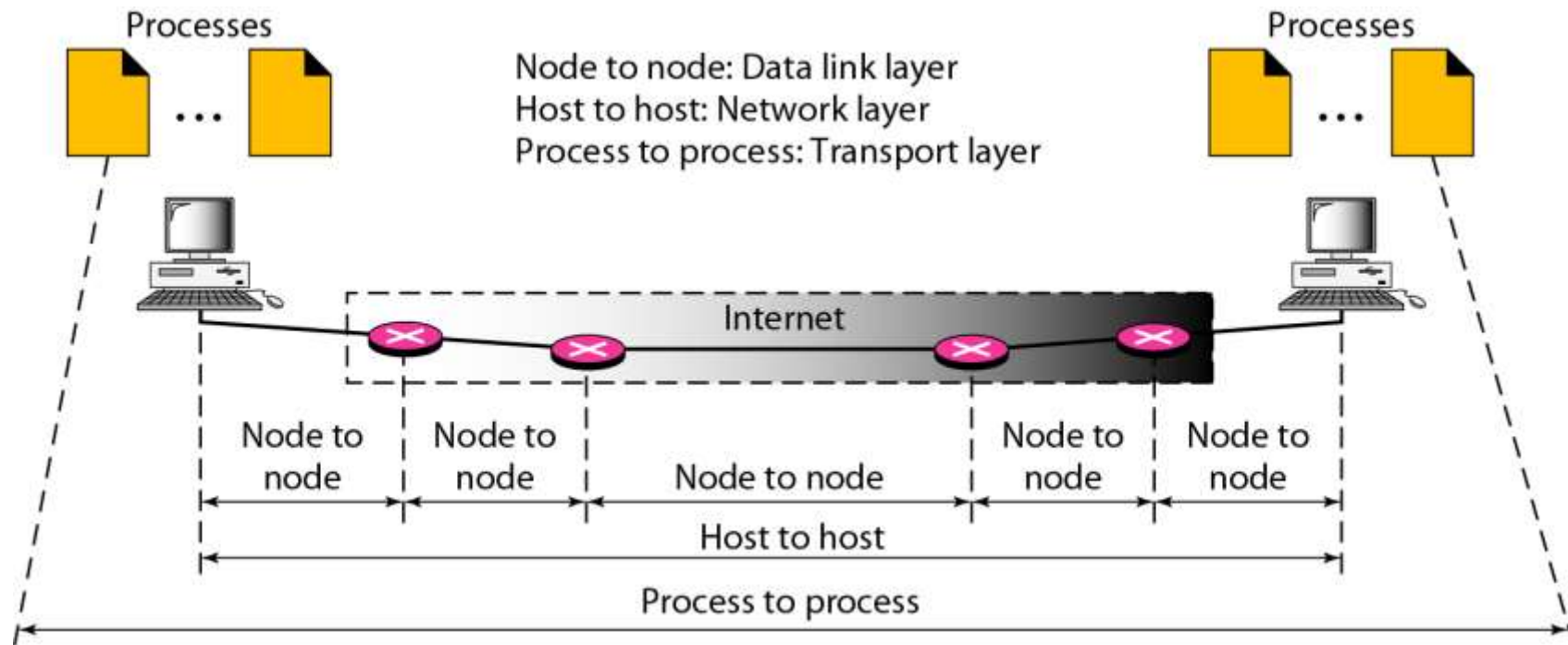
Continued..

- The transport layer is responsible for process-to-process delivery— the delivery of a packet, part of a message, from one process to another.
- It provides *logical communication* between app processes running on different hosts
- transport protocols run in end systems
  - send side: breaks app messages into segments, passes to network layer
  - rcv side: reassembles segments into messages, passes to app layer
- more than one transport protocol available to apps
  - Internet: TCP and UDP
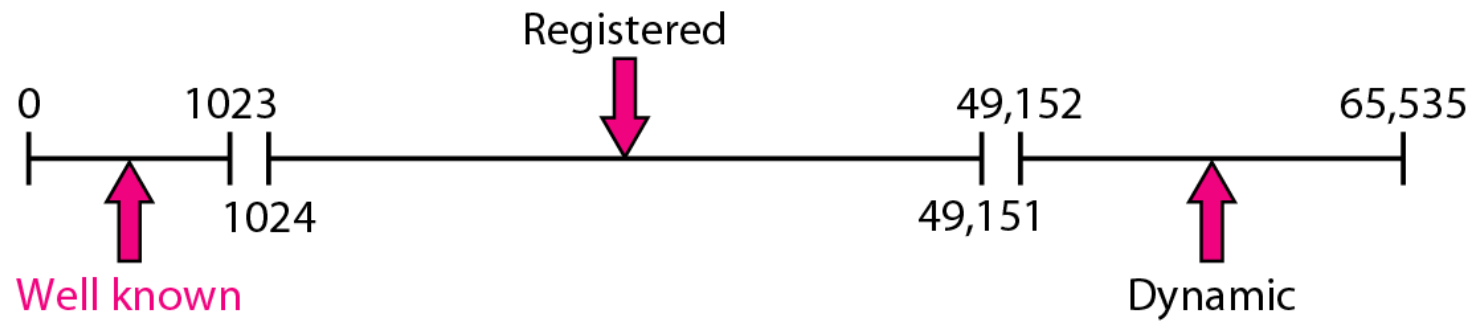
How It delivers messages to specific process

- Using Port address (16 bit)
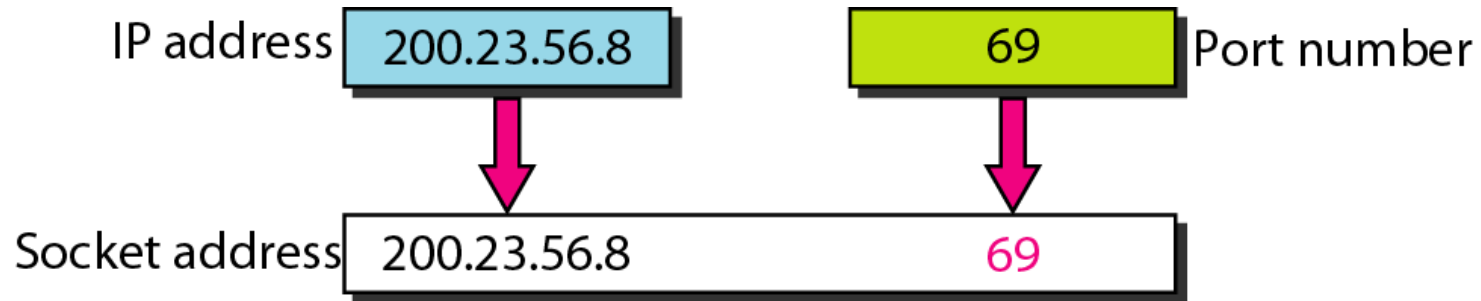- Ranges from 0 to 65,535
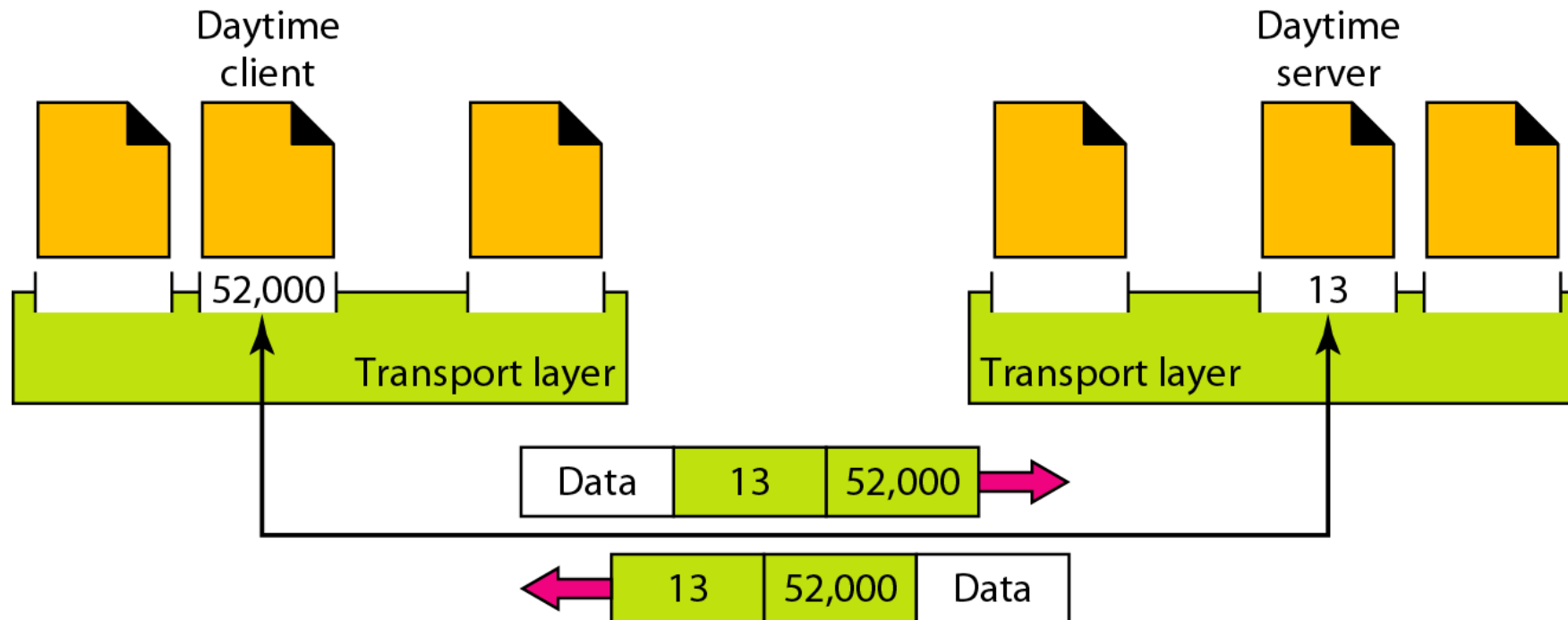
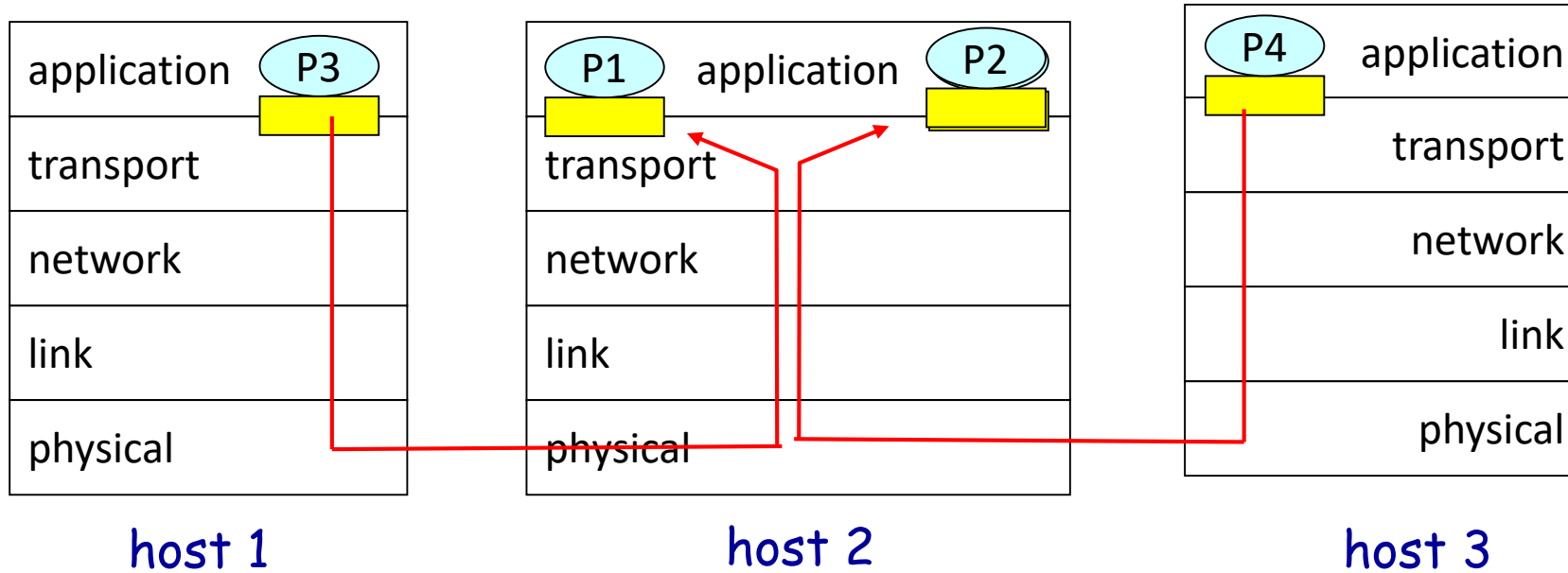# *IP addresses versus port numbers*
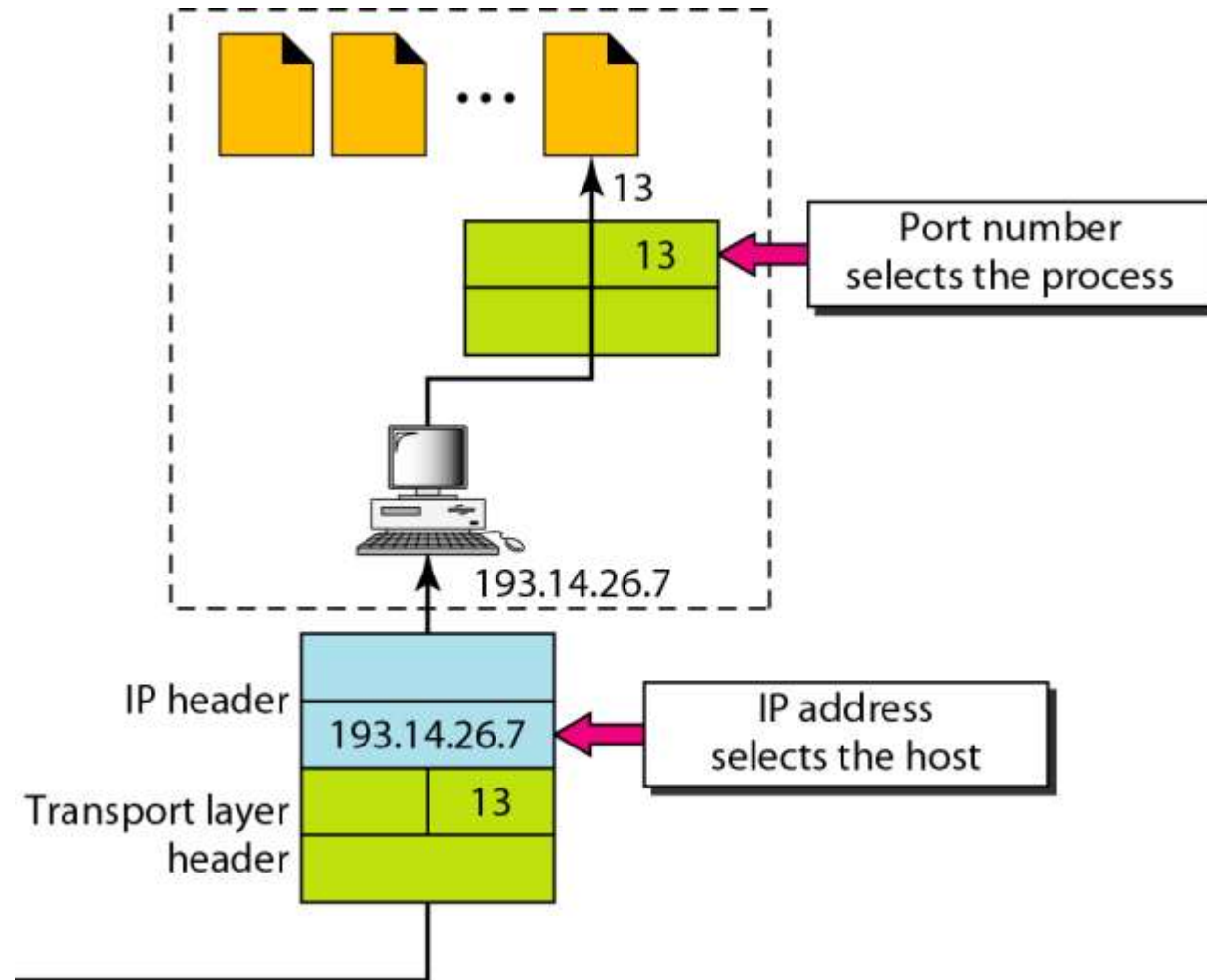
IANA ranges

# *Socket address (IP address + Port Address)*

What is the use of socket?

- The socket mechanism provides a means of inter-process communication (IPC).
- Socket is basically an API for enabling communication between two end points.
- A **socket** is one endpoint of a **two way** communication link between two programs running on the network.

Socket API
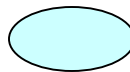
Multiplexing and demultiplexing
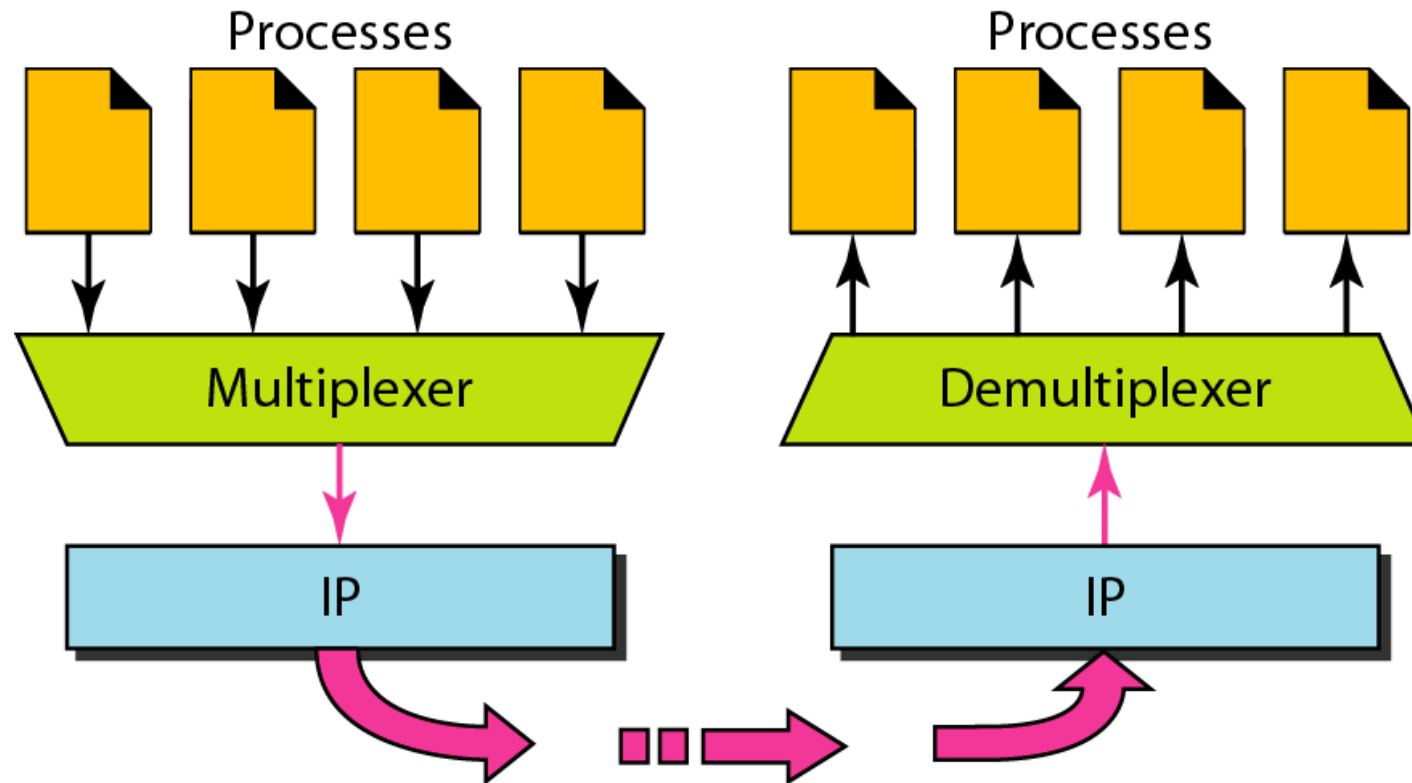
Multiplexing/demultiplexing

Demultiplexing at rcv host:

delivering received segments
to correct socket

▭ = socket   ⬭ = process

Multiplexing at send host:

gathering data from multiple
sockets, enveloping data with
header (later used for
demultiplexing)

application	P3
transport	
network	
link	
physical	

host 1

P1	application	P2
transport		
network		
link		
physical		

host 2

P4	application
	transport
	network
	link
	physical

host 3

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